

ICR PARTNERSHIPS

Institute of Cannabis Research and Vyripharm Enterprises form Partnership



In January of 2022, the Institute of Cannabis Research (ICR) and Vyripharm Enterprises, Inc (VEI) entered into a partnership agreement in which Vyripharm will provide equipment and associated funds to support the creation of a Comprehensive and Certification Testing Laboratory of the Chemistry Building on the CSU Pueblo campus at CSU Pueblo. The project will provide laboratory testing services in the field of cannabinoids (hemp/cannabis) and also will support research and commercialization in pursuit of Vyripharm's objectives.

Vyripharm is a leading biopharmaceutical/biotechnology innovator in personalized medicine. The team consists of scientists, researchers, medical and business professionals, communicators and regulatory experts. Vyripharm is focused on the integration of traditional and alternative medicine. Their aim is to ensure the safe use of agrobiopharmaceuticals through a commitment to public health and safety. On the biopharmaceutical/biotechnology side, their current focus is diagnostic and therapeutic applications in the areas of infectious diseases, neurological disorders, and cancer.

Vyripharm is uniquely positioned to become the source of approved licensing for tracking, tracing, certifying, compliance, monitoring and testing for agrobiopharmaceutical products slated for human consumption, and aims to maintain and improve public health and safety.

The ICR is the nation's first multi-disciplinary cannabis research center at a regional, comprehensive institution whose primary function is the generation of knowledge that contributes to science, medicine, and society, through scientific investigation of the benefits and risks associated with cannabis, ICR findings are being used to translate discoveries into innovative applications that improve people's lives. This partnership with Vyripharm will enhance the ICR's current research facilities and provide the ICR with the ability to expand its objectives in the field, and will enhance CSU Pueblo's and the ICR's research capacity. Vyripharm has agreed to assist the ICR in establishing and operating this lab and will work with the ICR to conduct research and development in the field and to advance Vyripharm's commercialization efforts, including, but not limited to, the track, trace, and certification of the origin, efficacy, potency, and/or quality of cannabis/hemp or cannabinoid products. It's important to note that all activities in the Lab will be conducted in compliance with both Colorado and Federal law.

(Vyripharm understands and acknowledges that CSU Pueblo's primary mission is the development and dissemination of scientific knowledge, and to educate its student body and preserve the academic freedom and integrity of CSU Pueblo and its faculty and to ensure that CSU Pueblo and its faculty are not regarded as captive researchers for Vyripharm.)

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Upcoming Webinars:

Cannabis Research Webinar Series:

- November 10 1:00PM MST Dr. Ari Greis
- December 8, 1:00PM MST Dr. Jahan Marcu

Cultivation Webinar Series:

- Nov 2 11:00AM MST Dr. Lawrence Smart
- Nov 16 11:00AM MST Dr. Eun-Soo Kim

A Deeper Look at Hemp

- Dr. Eun-Soo Kim

ICR PARTNERSHIP HIGHLIGHT



Dr. Elias Jackson

Introducing Dr. Elias Jackson, Vyripharm Enterprises, Inc

Dr. Jackson was born and raised in San Antonio, Texas and is a graduate of Sam Houston High School. His parents, E.B. and Erma Jackson-- both high school educators-- instilled in him early to "aim high." He went on to receive his Ph.D. in Molecular and Cell Biology from the University of TX Medical Branch at Galveston (UTMB) and trained at the Yale University School of Medicine's Cardiovascular Disease Research Institute. Dr. Jackson has over 20+ years' experience in Cellular & Molecular biology and translational drug development. He is Co-Founder and Sr. Vice President of Government and Scientific Affairs for Vyripharm Enterprises Inc.(VEI) located at The Texas Medical Center Innovation Institute. At VEI, Dr. Jackson oversees the firm's Regulatory and Scientific initiatives at the local, State and Federal government level. VEI is a Precision Medicine Biopharmaceutical Firm which develops drug delivery systems and diagnostic platforms for neurologic disorders and cancer. He has several inventions and patents. The company developed, and was issued, the first-ever patent for comprehensive cannabinoid testing from agriculture to clinical applications. Dr. Jackson believes that natural science research is changing. He states that "The development of novel drug formulations and drug delivery systems now offers new opportunities for lucrative

Intellectual property development. More importantly, this development opens the door for advanced biopharmaceutical education and training."

Dr. Jackson's research is extensive and varied. It includes cardiovascular disease, NASA space research evaluating the effects of microgravity on the trans-localization of cellular proteins to the nucleus, and DNA Damage and Repair studying the effects of ionizing radiation on human DNA. He was previously a cancer drug developer with ILEX Oncology, and he has peer-reviewed publications in the areas of diabetes, DNA damage & repair, pharmacology, cellular biology, molecular biology and cardiovascular disease.

Dr. Jackson is married with three children. One child was diagnosed on the Autism spectrum. This had a profound effect on the trajectory of his career and pushed him to focus on advancing diagnosis and treatment of debilitating conditions. "Having a child diagnosed with Autism motivated me to utilize my knowledge to develop precision tools that target and treat neurological disorders. This led to the realization that Cannabinoid-based pharmaceuticals had the potential to advance patient quality of life and usher in a new era of novel drug formulations", he states. In addition to the development of innovative drug delivery systems and diagnostic platforms, VEI also focuses on the integration of traditional pharmaceuticals with non-traditional pharmaceuticals and the regulatory framework for their commercialization. "I am excited to partner with the Institute for Cannabis Research (ICR). The ICR has established itself as the first-of-its-kind research institute and will be the new standard of advanced education for the next generation of research scientists and drug developers. I feel that the ICR at CSU-Pueblo is the future of undergraduate/graduate education. This partnership will create a pathway for young scientist to gain the experience in advanced testing as well as medical robotic technology research & development."

JOURNAL OF CANNABIS RESEARCH

Journal of Cannabis Research



The Journal of Cannabis Research (JCR) is the official publication of the Institute of Cannabis Research. It is the only broadly multidisciplinary journal of cannabis research, encompassing not only clinical and scientific research, but

also research into social, business, economic, legal, environmental, and ethical impacts of cannabis use and the changing legal status of cannabis. To learn more about the aims and scope of the journal as well as submission guidelines, please visit: [Journal of Cannabis Research](#)

Please see two recent articles here:

- [Medical cannabis authorization patterns, safety, and associated effects in older adults](#)
- [Weight stability in adults with obesity initiating medical marijuana treatment for other medical conditions](#)

The Institute of Cannabis Research is accepting donations to support future cannabis research. You, our friends, colleagues and supporters, have the ability to help us continue with cutting edge research by donating to the ICR Research Fund. Please consider contributing to this important research to enhance our understanding of the applications and impacts of cannabis. All donations contributed are tax deductible. Please consider a year-end donation or feel free to contact the Foundation Office to learn of donations through wills, trusts, and etc.

[Donate Here](#)

ICR RESEARCH



Our funded FY23 Research Studies have been announced. Funded projects focus on topics related to cannabis research, including biology, chemistry, physiology, and agronomy; medical and clinical research; and public health and harm reduction/societal impacts. These projects have an anticipated start date of October 1st. Please find the link to all of the FY23 awardees here:

<https://www.csupueblo.edu/institute-of-cannabis-research/research/research-studies/index.html>

Kent Hutchison, PhD

**Institute of Cognitive Science Affiliated Faculty & Professor,
University of Colorado Boulder**

Cannabinoids and Traumatic Brain Injury: A Randomized, Placebo Controlled Trial Traumatic brain injury (TBI) represents a major public health burden due to chronic neuropsychiatric sequelae (emotional, physical and cognitive) that negatively affect vocational activities, interpersonal relationships and independent living. Responses of these chronic symptoms to any particular treatment are both variable and, too often, suboptimal. As a result, persons with TBI are frequently prescribed numerous therapies which may or may not be efficacious. Cannabinoids (both CBD and THC) have gained significant public attention as a potential alternative treatment for TBI sequelae. However, the growing perception of the efficacy of cannabinoids for TBI and related pain, mood and anxiety disorders can be directly contrasted with the limited scientific evidence. Moreover, due to complex regulatory requirements, many individuals use medical cannabis on an “off-label” basis without the appropriate scientific controls to establish efficacy. This project will identify the potential therapeutic effects associated with widely available cannabinoid formulations on TBI-related deficits in cognitive function and self-reported anxiety, depression, sleep, and pain. The proposed study relies on a gold standard methodology and maximizes generalizability of findings, despite the current regulatory environment for cannabis research.



Dr. Kent Hutchison, PhD

UPCOMING WEBINARS



Institute of Cannabis Research
at Colorado State University Pueblo

**Cannabis
Research
Webinar
Series**



Jefferson
Thomas Jefferson University

**Lambert Center for
the Study of Medicinal
Cannabis & Hemp**

November Webinar: The ICR and Lambert Center are pleased to host Dr. Ari Greis for the webinar on November 10th at 1:00PM MST [Register Here](#)

Title: "The Use of Cannabis for the Treatment of Chronic Orthopedic Pain"



Dr. Ari Greis

Dr. Ari Greis is a board-certified physician who specializes in the non-operative treatment of spinal and musculoskeletal disorders. He is the director of the Medical Cannabis Department at Rothman Orthopaedic Institute. He is interested in the treatment of chronic pain with cannabis as an alternative to opioids.

Dr. Greis is a Clinical Assistant Professor of Rehabilitation Medicine at Thomas Jefferson University who has published numerous research articles, textbook chapters, and continues to teach and lecture to residents and medical students. Dr. Greis served as the chief resident at the University of Washington in Seattle and is fellowship trained in sports and spine rehabilitation. He performs fluoroscopic guided spine injections, ultrasound guided peripheral joint injections, trigger point injections, and electrodiagnostic testing.

December Webinar: The ICR and Lambert Center are pleased to host Jahan Marcu, PhD, Founding Partner at Marcu & Arora, for the webinar on December 8th at 1:00PM MST [Registration will be available from the ICR Webpage soon.](#)

Title: TBA



Dr. Jahan Marcu

Jahan Marcu, Ph.D, and Founding Partner at Marcu & Arorahas, has over 15 years of experience in academic research, industry, and government relations. Dr. Marcu is presently the Chief Operations Officer, Director of Experimental Pharmacology and Behavioral Research at International Research Center on Cannabis and Health, which he co-founded. Dr. Marcu is the former Chief Science Officer at Americans for Safe Access (ASA) and former Director of ASA's Patient Focused Certification program, which is a health and safety oversight program that assesses regulatory compliance at cannabis operations. Dr. Marcu published the first direct measurements of THC and CBD synergy, for which he received the Billy Martin research award from the International Cannabinoid Research Society. His Ph.D. focused on solving the structure and function of the CB1 receptor as well as investigating the role of the endocannabinoid system in bone. He has also developed pharmacogenomics testing technology, used commercially and in research studies to predict drug-drug interactions with cannabis, as well as using the technology to guide dosing and administration forms for patients.

UPCOMING WEBINARS



CANNABIS CULTIVATION Webinar Series



November Webinar: The ICR Hemp Farmers Association is pleased to host Dr. Lawrence Smart on Wednesday, November 2, at 11:00AM MST [Register Here](#)
Title: "Shedding light on the genetic control of flowering time in hemp"

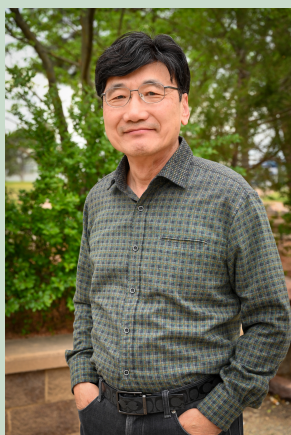
Larry Smart is Professor of Plant Breeding and Genetics in the Horticulture Section of the School of Integrative Plant Science at Cornell University and is based at Cornell AgriTech in Geneva. He is a plant geneticist and breeder who uses genomic tools to understand the biology of key traits and to breed improved cultivars of hemp for grain, fiber, and cannabinoids; shrub willow for bioenergy and carbon sequestration; and hop for craft breweries in New York.

His research focuses on hybrid vigor, sex determination, and disease resistance. He earned a BS in Biology from Cornell University, PhD in Genetics from Michigan State University, and was an NSF post-doctoral fellow at UC Davis.



Dr. Lawrence Smart

November Webinar: The ICR Hemp Farmers Association is pleased to host Dr. Eun Soo Kim on Wednesday, November 16, at 11:00AM MST [Register Here](#)
Title: "Structure and Function of Glandular Trichomes in Cannabis"



Dr. Eun Soo Kim

Dr. Eun-Soo Kim's background is in plant morphology and development, specializing in industrial and medicinal plants such as Cannabis, ginseng, geranium, hops, and Mentha. His research informs on practical issues in agriculture and plant biology. As a postdoctoral researcher at Indiana University, he was responsible for investigating the development and ultrastructure of glandular trichomes in Cannabis. Additionally, from 1991 until 2002, he served as a visiting scientist in Dr. Paul Mahlberg's lab, which was one of only two given DEA permission to grow Cannabis in the United States. He has published 20 research articles on Cannabis which have been cited over 730 times. His short-term plan is to research cannabinoids on glandular trichomes, such as CBD, CBG, and CBC in the hopes of providing useful knowledge for the development of a candidate medicine. He is Professor Emeritus at Konkuk University and has served as Dean, College of Life Science and Biotechnology, Konkuk University. Currently, he is working as a Visiting Scholar, with the Institute of Cannabis Research.

A Deeper Look at Hemp – Scanning electron microscopy images presented by

Dr. Eunsoo Kim, Visiting Scientist

Explanation of Figures

Light microscopical images obtained from three internodes of a Cannabis stem illustrate the different developmental stages of fiber maturation.

- Figure 1 shows a stem cross-section collected from the third internode (1) and stained with toluidine blue. Initial cells of phloem fibers (PF) are distinctively visible.
- Figure 2 demonstrates the phloem fibers of stems arranged in bundles inwardly from the cortical cells. The tissue samples were collected from the second internode (2).
- Figure 3 shows that phloem fibers were developed more, but the cortical region largely collapsed due to the expansion of phloem fibers. The tissues were cut from the first internode (3) and stained with fast green F and safranin. Cortex (CT), Secondary phloem (SP), Secondary xylem (SX), Vascular cambium (VC).

